

U.S. Patent Application No. 10/070,882  
Amendment and Response to Non-Final Office Action  
Page 6

### REMARKS

The present application is directed to a method of enhancing expression of a desired protein at mucosal effector sites by placing a nucleotide sequence encoding the protein to be expressed under the control of a promoter in a construct, which is administrable to mucosal cells. Constructs used in the methods, as well as suitable recombinant gut-colonizing microorganisms such as *Salmonella spp.*, are described. Such organisms are useful in the preparation of vaccines.

Following entry of this amendment Claims 1, 23-32 will be pending. Claims 1, 23-25 are amended. Claims 2-22 are cancelled without prejudice. No new matter is added and support for the amendments is found throughout the specification.

### *Informalities-Specification*

In the Office Action mailed February 23, 2006, the Examiner objected to the specification for failing to provide proper antecedent basis for the claimed subject matter.

With regard to Claim 1, applicants have amended page 4 of the specification to clarify that the desired protein is encoded by a nucleic acid. Applicants respectfully submit that the concept that nucleic acid molecules encode proteins is well known to those skilled in the art and is not new matter.

With regard to Claims 23-32, Claims 23 and 24 have been amended. Claims 25-32 depend, directly or indirectly, from amended Claims 23 or 24.

The Examiner stated that the term "*Schistoma mansonii*" in the specification was confusing and/or incorrect. Applicants have amended the first paragraph on page 7 of the specification to change the spelling of this organism to "*Schistosoma mansonii*" and to make other spelling and grammar corrections. If applicants have misunderstood the Examiner's objection in any way, clarification is respectfully requested.

Accordingly, Applicants respectfully request withdrawal of the Examiner's objections to the specification.

U.S. Patent Application No. 10/070,882  
Amendment and Response to Non-Final Office Action  
Page 7

***Claim rejections under 35 U.S.C. § 102***

In the Office Action mailed February 23, 2006, the Examiner rejected Claims 2-4, 7-15, 17-19, 21 and 22 as anticipated by Titball *et al.*, U.S. 5,985,285 (hereinafter "Titball *et al.* patent") under 35 U.S.C. §102(e) and rejected Claims 2-4, 7-15, 17-19, 21 and 22 as anticipated by Titball *et al.*, (WO 96/28551) (hereinafter "Titball *et al.* PCT") under 35 U.S.C. §102(b). Applicants respectfully submit that amendments to the claims overcome the rejection.

Claims 2-4, 7-15, 17-19 and 21-22 have been cancelled, thereby rendering this rejection moot. Accordingly, applicants respectfully request the withdrawal of the rejections under 35 U.S.C. §102(b) and (e).

***Claim rejections under 35 U.S.C. § 112, first paragraph***

In the February 23, 2006 Office Action, the Examiner rejected Claims 23-32 and dependant claims thereof, under 35 U.S.C. §112, first paragraph, as containing new matter. Applicants respectfully submit that the amendments to the claims overcome the rejection.

As mentioned above, Claims 23 and 24 have been amended, and Claims 25-32 depend, directly or indirectly, from amended Claims 23 or 24. Applicants respectfully submit that support for the limitations of Claim 23 can be found on, at least, page 4, lines 17-18 and page 5, lines 21-24 of the instant application.

In addition, Applicants respectfully submit that enhancement of the level of expression of proteins at mucosal cells is clear from the teachings on page 4, lines 1-4 of the present specification. Applicants assert that the teachings disclosed on page 4, lines 6-11 cannot be interpreted in isolation from the remainder of the specification, but that the invention and specification as a whole should be examined. Applicants respectfully submit one of ordinary skill in the art would understand that the most "desired protein" is an antigenic protein able to induce a protective immune response in a mammal. On page 4, lines 13-15 of the instant application also disclose that the invention further comprises a construct in which the promoter (P<sub>phoP</sub>)

U.S. Patent Application No. 10/070,882  
Amendment and Response to Non-Final Office Action  
Page 8

sequence is operatively interconnected with sequences that encode protective proteins that produce a protective immune response.

Furthermore, on page 5, lines 21-24 of the instant application state that mucosal responses are specifically required to protect against pathogens. Page 11, line 31-page 12, line 3 also disclose how a promoter system enhances mucosal antibody response and is therefore important in protection against disease. This principle is further explained in Example 5 and Figure 1, wherein enhanced levels of mucosal expression were detected when promoters were used to drive expression of a protein (the F1 protein of *Y. pestis*) that produced a protective immune response.

Applicants respectfully submit that additional support for the limitations of Claim 24 can be found in original Claim 3 and on page 5, lines 11-14 of the present specification.

Applicants respectfully submit that additional support for the limitations of Claim 25 can be found in original Claim 4 and in the arguments presented above with regard to Claim 23.

Applicants respectfully submit that additional support for the limitations of Claims 26-30 can be found in original Claims 7-11 and in the arguments presented above regarding Claim 23.

Applicants respectfully submit that additional support for the limitations of Claim 31 can be found on page 8, lines 15-19 and in the arguments presented above regarding Claim 23.

Applicants respectfully submit that additional support for the limitations of Claim 32 can be found on page 8, lines 21-22 and in the arguments presented above regarding Claim 23.

Accordingly, Applicants respectfully request withdrawal of the rejection under 35 U.S.C. §112, first paragraph.

U.S. Patent Application No. 10/070,882  
Amendment and Response to Non-Final Office Action  
Page 9

***Claim rejections under 35 U.S.C. § 112, second paragraph***

In the February 23, 2005 Office Action, the Examiner rejected Claims 1, 2-4, 7-15 and 17-32 under 35 U.S.C. § 112, second paragraph, as vague, indefinite or inconsistent. Applicants respectfully submit that the amendments to the claims overcome the rejection.

Applicants have amended Claim 1 to remove the phrase “causing expression in mucosal cells”.

Claim 2 has been canceled without prejudice to expedite prosecution, thereby rendering the rejection moot.

Claim 23 has been amended to clarify that the protein induces a protective immune response in a mammal to which the protein is administered.

Claims 11 and 22 have been canceled without prejudice to expedite prosecution, thereby rendering the rejection moot, and Claim 30 has been amended to clarify that the protein is the F1 antigen of *Yersinia pestis*.

With regard to item “(e)” in this section of the Office Action, applicants respectfully submit that Claims 1 and 23 have been amended as described above to clarify the protein induces a protective immune response in a mammal to which the protein is administered.

Applicants have amended Claim 24 in view of the rejection raised in item “(f)” in this section of the Office Action.

Applicants have amended Claim 1 to replace “a nucleotide sequence” with “the nucleotide sequence” as suggested by the Examiner.

Claim 20 has been canceled without prejudice to expedite prosecution, thereby rendering the rejection moot.

With regard to item “(i)” in this section of the Office Action, Claim 8 has been canceled without prejudice to expedite prosecution and Claim 27 has been amended to replace *Salmonella Spp* with *Salmonella spp*. The designation “spp.” refers generically to species. Applicants submit that one of ordinary skill in the art would be aware of this abbreviation and understand its meaning. Clearly, Claim 27 refers to two distinct *Salmonella* species, and this falls within the scope of Claim 26.

U.S. Patent Application No. 10/070,882  
Amendment and Response to Non-Final Office Action  
Page 10

With regard to item "(j)" in this section of the Office Action, Claims 3-4, 7-15, and 17-22 have been canceled without prejudice to expedite prosecution and Claim 1 has been amended as described above.

Applicants respectfully submit that the amendments to the claims as provided herein overcome rejections (a)-(j) as raised by the Examiner. Accordingly, applicants respectfully request withdrawal of the Examiner's rejection under 35 U.S.C. §112, second paragraph.

U.S. Patent Application No. 10/070,882  
Amendment and Response to Non-Final Office Action  
Page 11

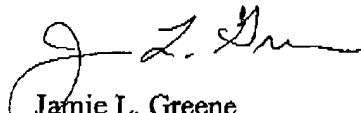
**CONCLUSION**

The foregoing is submitted as a full and complete Response to the Non-Final Office Action mailed on February 23, 2006. For at least the reasons given above, applicants respectfully submit that the pending claims are definite and novel. Accordingly, applicants submit that the claims in the present application are in condition for allowance, and such action is courteously solicited.

If the Examiner believes there are other issues that can be resolved by telephone interview, or that there are any informalities remaining in the application that may be corrected by Examiner's Amendment, a telephone call to the undersigned attorney at (404) 815-6500 is respectfully solicited.

No additional fees are believed due; however the Commissioner is hereby authorized to charge any additional fees that may be required, or credit any overpayment to Deposit Account number 11-0855.

Respectfully submitted,

  
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